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XXIX.— *A Report on the Extra-Antarctic Amphipoda Hyperiidea collected by the 'Discovery.'* By DOROTHY A. STEWART, B.Sc., Platt Zoological Research Scholar, the University of Manchester.

[Plates IV.-VII.]

THE Amphipoda described below are, without exception, representatives of the pelagic group Hyperiidea, which were taken by the 'Discovery' Antarctic Expedition in tropical and subtropical waters during the year 1901 on the outward journey to the Pole.

The majority of the specimens appear to have been captured in surface tow-nets from localities in the tropical and South Atlantic; but there is, in addition, a single specimen of a subantarctic species, *Hyperiella antarctica*, from a more southerly latitude.

The determination of the species of Hyperiidea in a collection like the present one, consisting of isolated specimens from scattered localities, is attended with considerable difficulty—most of the species seem to be very imperfectly known, and the whole group is badly in need of revision. The material at hand is wholly inadequate to attempt such a revision, and in the course of the work it has often been necessary to identify specimens by locality rather than by character, so trifling have been the points used in specific distinctions.

It is interesting to record the occurrence of an entirely new genus, *Hemiscelus*, represented by a specimen taken in the *Ann. & Mag. N. Hist.* Ser. 8. Vol. xii. 18

S. tropical Atlantic, as well as two new species of *Vibilia*, which have been added to the list of those already known.

The presence of several other already-known species in the collection has also served to extend their geographical range considerably southward.

It may be as well, before proceeding to a description of the various types, to indicate clearly the terminology which has been adopted throughout. In all Amphipoda, the first thoracic appendages are modified to serve as additional mouth-organs, and the second and third are slightly differentiated from the succeeding ones, being more or less modified for prehension—for these latter the terms *first* and *second gnathopods* are used, the remaining five thoracic limbs being designated as the *third*, *fourth*, *fifth*, *sixth*, and *seventh legs* respectively.

The various joints or segments of the limbs are described in their numerical order as the *second (or basal) joint*, *third*, *fourth (or merus)*, *fifth (or carpus)*, *sixth (or propodus)*, and *seventh (or dactylus)*.

The classification adopted in the arrangement of the various families is that used by Stebbing in his report on the 'Challenger' Amphipoda, the only differences being that the genus *Dairella* is placed in a distinct family, as proposed by Vosseler, and the name of the family Tryphænidæ is changed to Lycæidæ, as suggested by Sars.

The collection is the property of the British Museum (Natural History).

The examination of the specimens has been carried out in the Zoological Laboratories of the University of Manchester, under the direction of Prof. S. J. Hickson, F.R.S., to whom I am indebted for many helpful suggestions.

I desire also to express my thanks to Dr. W. M. Tattersall for permitting me in the first place to examine the collection, for his continual guidance and encouragement during the preparation of this paper, and for his valuable assistance in the final revision and arrangement.

Tribe HYPERIIDÆ.

Family Vibiliidæ.

Genus VIBILIA, Milne-Edwards.

Vibilia propinqua, Stebbing, 1888.

Vibilia propinqua, Vosseler, 1901.

Vibilia propinqua, Stebbing, 1904.

Locality. Lat. 13° 59' S., long. 34° 35' W., Sept. 9th, 1901 (near Bahia), two females.

Stebbing (1904) quotes as a feature to distinguish this species from *V. jeangerardi* the fact that the second and third ural segments are coalesced.

Chevreaux (1900) has pointed out that in *V. jeangerardi* the second and third ural segments are fused in the centre, but free at the edges—a fact which Stebbing (1904) corroborates and which is borne out by the specimens in the present collection.

In *V. propinqua*, however, exactly the same thing occurs, and from an examination of several species it would appear that this partial fusion of the last two ural segments is of frequent occurrence among different species of *Vibilia*. It can therefore hardly be regarded as of any value as a specific character.

Distribution. North Pacific (*Stebbing*); S. Atlantic, Guinea Stream, and Sargasso Sea (*Vosseker*); Bay of Biscay (*Stebbing*); West coast of Ireland (*Tattersall*).

Vibilia viatrix, Bovallius.

Vibilia viatrix, Bovallius, 1887 (1) & (2).

Locality. Lat. $15^{\circ} 14\frac{1}{2}'$ S., long. $33^{\circ} 11\frac{1}{2}'$ W., Sept. 10th, 1901 (near Bahia), male and female.

Bovallius (1887), when describing the species, remarks that "the second and third ural segments are free, not coalesced"; and Stebbing (1888), in describing a specimen closely resembling that of Bovallius, constitutes a separate species, *V. viator*, on the ground that it is distinct in having the second and third ural segments fused.

Among the forms in the present collection, however, which agree in all other essential points with that figured and described by Bovallius, we find the same peculiarity as in *V. propinqua* and *V. jeangerardi*, i. e. the second and third ural segments are fused at the centre, but free at the margins. It will thus be seen that this character is of fairly common occurrence.

Distribution. Very widespread. N. and S. Atlantic, tropical Pacific, and Indian Ocean (*Bovallius*). Recorded by Stebbing (1888) from "Cape York."

Vibilia jeangerardi, Lucas.

Vibilia jeangerardi, Lucas, 1845.

Vibilia jeangerardi, Marion, 1874.

Vibilia jeangerardi, Bovallius, 1887 (1) & (2).

Locality. Off Madeira, one female.

Chevreaux (1900) has drawn attention to the partial fusion

of the last two ural segments, which has already been dealt with in this paper.

In the structure of the seventh leg, to which he also drew attention, the 'Discovery' specimen agrees in having the last joint shorter than the penultimate one.

Distribution. The Atlantic, the Mediterranean (*Bovallius*); N. Atlantic Ocean (*Chevreaux*); Sargasso Sea and tropical Atlantic (*Vosseler*).

Vibilia serrata, sp. n. (Pl. IV.; Pl. V. figs. 1-6.)

Localities. Lat. 54° 3' S., long. 34° 35' W., Dec. 17th, 1903, surface (off St. Georgia), two males. Lat. 36° 27½' S., long. 8° 20' W., Sept. 24th, 1901, one male. Lat. obs. 37° 47' S., long. 3° 59' E., Sept. 28th, 1901 (near Tristan da Cunha), one male.

Body (Pl. IV.) fairly broad and stoutly built; pleon sharply distinct from the pereion.

Head rostrate, about twice as deep as long, and considerably longer than the first two pereional segments.

Pereion rounded, not carinate; equal in length to the pleon.

Epimeral plates of the pleon of considerable size and covering about half the peduncles of the pleopods; lower margins deeply serrated, the number of teeth being greater on the second and third than on the first plate.

Eyes extremely large, occupying the entire lateral portions of the head; deeply pigmented.

First antennæ (Pl. V. fig. 1) having the basal joint of the peduncle longer than the other two together; the first joint of the flagellum half as long again as the head, broad and oval at the base, and becoming thin and tapering at the apex; terminal joints two in number and very minute.

Second antennæ (Pl. V. fig. 2) seven-jointed, of which the fifth is the longest; the anterior border of all the joints bearing numerous small bristles.

First gnathopods (Pl. V. fig. 3) simple, slightly shorter than the second; basal joint of considerable breadth; merus with a prominent seta at the hinder edge of the lower border; carpus considerably broader than the propodus, but about the same length, the corners of the distal border feebly produced; curved inner border of the propodus finely serrated; dactylus stoutly built and half as long as the propodus, having the inner margin finely serrate.

Second gnathopods (Pl. V. fig. 4): basal joint long and somewhat linear; merus having the hinder border fringed

with one or two long setæ ; carpal process half as long as the propodus, serrated on its inner distal margin ; hinder margin of the propodus bearing numerous fine serrations ; curved edge of the dactylus finely serrated.

Third and fourth legs about equal in length ; merus as long as, but slightly broader than, the carpus, the anterior border slightly produced at its distal end ; propodus a little longer than the carpus, serrated on its hinder margin, which bears numerous small setæ ; dactylus slightly curved, about half as long as the propodus.

Fifth and sixth legs considerably longer than the third and fourth ; basal joint broad and ovate ; merus slightly shorter than the carpus ; propodus very long and linear, as long as the two preceding joints ; the anterior border of the merus, carpus, and propodus bearing numerous small setæ ; dactylus feebly curved, about $\frac{1}{5}$ of the length of the propodus.

Seventh leg (Pl. V. fig. 5) : basal joint almost as long and quite as broad as those of the preceding limbs ; the anterior border with four strong setæ ; remaining joints remarkably reduced in size, forming an almost inconspicuous appendage ; the entire limb reaching to about $\frac{1}{3}$ of the length of the fifth and sixth legs.

Pleon equal in length to, but slightly deeper than, the perion ; *pleopods* with the peduncles a little shorter than the rami.

The urus : second and third ural segments free, not coalesced ; hinder corners of the last ural segment slightly produced backwards.

First pair of uropoda : peduncles about equal in length to the rami ; both rami with serrated margins.

Second pair of uropoda not reaching to the apex of the third pair ; peduncles considerably shorter than the rami ; outer ramus slightly shorter and narrower than the inner ; both rami with serrated margins.

Third pair of uropoda : peduncles longer than the rami ; both rami with fine serrations on the inner and outer margins.

Telson (Pl. V. fig. 6) semicircular, about $\frac{1}{4}$ as long as the peduncles of the last uropods.

Length, excluding antennæ, 8 mm.

Vibilia serrata may be easily recognized by the serrations on the epimeral plates and by the curious structure of the seventh leg, which is quite unlike that found in any other species of this genus, with the exception of *V. hodgsoni*, which will be described later.

The large size of the eyes is a distinguishing feature, although it is possible that this may be a sexual character, as

the specimens at my disposal are all males; however that may be, the two features mentioned above will serve to distinguish this species from any hitherto described.

The first antenna is very distinctive in appearance, having the basal joint of the flagellum broad and oval, but tapering towards the apex, and the curious form of the second antenna is also worthy of note, the fourth and fifth joints being strikingly longer than the others; this, again, is probably a character peculiar to the male.

In the possession of a small rostrum and in the size of the eyes this species resembles *V. macropis*, Bovallius, but the first and second antennæ in the two forms are entirely different, and may easily serve to distinguish them.

The shape of the last ural segment, which has the hinder corners produced backwards, suggests *V. gracilentia*, and here again the exceptional size of the eyes only serves to increase the resemblance.

Vibilia longipes, Bovallius.

Vibilia longipes, Bovallius, 1887 (1) & (2).

Localities. Lat. D.R. $10^{\circ} 32'$ S., long. $32^{\circ} 29'$ W., Sept. 7th, 1901, one male. Lat. $12^{\circ} 27'$ S., long. $33^{\circ} 33'$ W., Sept. 8th, 1901 (S. Atlantic, near Pernambuco), one male.

Distribution. The S. Atlantic, the Pacific (*Bovallius*); South Equatorial current (*Vosseler*).

Vibilia armata, Bovallius.

Vibilia armata, Bovallius, 1887 (1) & (2).

Localities. Lat. $36^{\circ} 03\frac{1}{4}'$ S., long. $12^{\circ} 50\frac{1}{4}'$ E., Oct. 1st, 1901, two males. Lat. $35^{\circ} 14\frac{1}{4}'$ S., long. $15^{\circ} 11\frac{3}{4}'$ E., Oct. 2nd, 1901 (near Tristan da Cunha), one male.

Distribution. Tropical and S. Atlantic (*Bovallius*); the Mediterranean (*Vosseler*); Bay of Biscay (*Stebbing*); West coast of Ireland (*Tattersall*).

Vibilia gracilentia, Bovallius.

Vibilia gracilentia, Bovallius, 1887 (1) & (2).

Locality. Lat. $35^{\circ} 14\frac{1}{4}'$ S., long. $15^{\circ} 11\frac{3}{4}'$ E., Oct. 2nd, 1901 (off the Cape of Good Hope), one male.

In this specimen the produced hinder corners of the last ural segment are not so long as those in the form figured and described by Bovallius, 1887 (2); but in all other respects the 'Discovery' form is in close agreement with his description.

The above locality would appear to be the most southerly yet recorded for the species. Vosseler (1901) reports it from the S. Atlantic, but remarks that its occurrence there requires further confirmation.

Distribution. The Atlantic (*Bovallius*); Gulf of Florida, N. and S. Equatorial currents (*Vosseler*).

Vibilia hodgsoni, sp. n. (Pl. VI. figs. 1-6.)

Locality. Lat. $36^{\circ} 03\frac{1}{4}'$ S., long. $12^{\circ} 50\frac{1}{4}'$ E., Oct. 1st, 1901 (near the Cape of Good Hope), one male.

Body comparatively small, but compact.

Head (Pl. VI. fig. 1) fairly short, rostrate, having the front recurved over the origin of the antennæ.

Coxal plates rectangular, of uniform depth, those of the third and fourth legs considerably shorter than the others; hinder corners of the fifth and sixth plates produced to a point.

Epimeral plates of the pleon with the hinder margins feebly serrated.

Eyes rather small, occupying the centre of the lateral part of the head; corneal facets large and rounded.

First antennæ (Pl. VI. fig. 1): first joint of the peduncle stouter than the two following and longer than either; first (and only) joint of the flagellum slightly longer than the head, broad, almost oval in shape, with a blunt apex, and having one or two small setæ on the inferior border.

Second antennæ (Pl. VI. fig. 1) five-jointed, having the third and fourth joints the longest; numerous short setæ on the anterior border of all the joints.

First gnathopods (Pl. VI. fig. 2) simple, slightly shorter than the second; basal joint broad, but linear; posterior border of the merus and carpus bearing numerous small setæ; hinder border of the propodus serrated; dactylus stout and slightly curved.

Second gnathopods (Pl. VI. fig. 3) with basal joint fairly narrow and longer than that of the preceding leg; merus almost as long as the carpus, narrower at the distal than the proximal end, and with eight strong setæ on the posterior border; carpus slightly broader than the merus; carpal process half as long as the propodus, serrated on its inner margin and terminating in a small stout spine; propodus almost as long as the carpus, the inner border serrated; dactylus stout and strongly curved.

Third and fourth legs almost equal in length, having the basal joint linear; merus long and narrow, broadest at the

distal end, the anterior edge with one or two small setæ; carpus about equal in length to the basal joint, but slightly narrower; propodus curved, slightly longer than the carpus, having numerous short setæ on its hinder border; dactylus stout, almost straight, about $\frac{1}{4}$ as long as the propodus.

Fifth and sixth legs considerably longer than the third and fourth; basal joint broad and laminate, with three setæ on the lower part of the anterior border; merus long and narrow, resembling the carpus in shape; propodus stout, rather shorter than the carpus, finely serrated on the lower half of the anterior border; dactylus short and stout.

Seventh leg (Pl. VI. fig. 4) very distinctive in appearance; basal joint extremely large in proportion to the remaining ones, having the lower hinder corner considerably produced and reaching to about half the length of the merus; lower part of the anterior border bearing six prominent setæ. Remaining joints comparatively uniform in structure; merus with a large seta on the anterior and posterior borders; carpus and propodus with their anterior margins serrated; dactylus stout, equal in length to the propodus.

Pleon not sharply marked off from the pereion. Peduncles of the *pleopods* shorter than the rami.

The urus (Pl. VI. fig. 6) having the second and third segments coalesced at the centre, but free at the margins; second segment only half as broad as the first and third; hinder corners of the last segment slightly produced backwards.

First pair of uropods with the peduncles linear, about twice as long as the rami; both rami equal in length, with broad serrations on the margins, more numerous on the outer than on the inner margin.

Second pair of uropods considerably shorter than the first; peduncles not quite as long as the rami; outer ramus slightly shorter than the inner, and both having serrated margins, with the serrations finer and more numerous on the inner margin.

Third pair of uropods having the peduncles broad and fairly stout, about the length of the rami; inner rami stout, rounded at the distal ends, with their inner margins finely serrated; outer rami narrower, broad at the base but tapering to a point, and having numerous serrations on the inner margin and a few small setæ on the outer one.

Telson (Pl. VI. fig. 6) broad and tongue-shaped, about half as long as the peduncles of the last uropods.

Length, excluding antennæ, 6 mm.

The nearest allies of this species would seem to be *V. jean-gerardi* and *V. longipes*.

It resembles the former in the possession of a rostrate head and in the fusion of the second and third ural segments, while the length of the fifth and sixth walking-legs in relation to the preceding ones recalls *V. longipes*.

From both these forms *V. hodgsoni* is quite distinct, in that (1) the hinder corners of the last ural segment are distinctly produced backward, and (2) the seventh walking-leg is of aberrant and quite characteristic shape.

It is curious to notice that in two points (viz. the curious structure of the seventh leg and the serrated epimeral plates) this species presents some resemblance to *V. serrata*; but it is easily distinguished by (1) the form of the first antenna, (2) the feebler serrations on the margins of the epimeral plates, and (3) the form of the seventh leg, which has the hinder portion of the inferior margin considerably produced downwards.

It is to be regretted that in the present collection there is no female of this species or of *V. serrata*.

Family Paraphronimidæ, Bovallius.

Genus PARAPHRONIMA, Claus.

Paraphronima gracilis, Claus.

Paraphronima gracilis, Claus, 1879.

Locality. Lat. 17° 15' S., long. 32° 05' W., Nov. 9th, 1901 (S. Atlantic, between Bahia and Rio de Janeiro), one male, length 8.5 mm.

Distribution. Tropical and temperate regions of the Atlantic; the northern temperate and the tropical regions of the Pacific (*Bovallius*, *Stebbing*); the Azores (*Chevreux*).

Paraphronima crassipes, Claus.

Paraphronima crassipes, Claus, 1879.

Paraphronima clypeata, Bovallius, 1885 & 1889.

Paraphronima pectinata, Bovallius, 1887.

Localities. Lat. obs. 37° 47' S., long. 3° 59' E., Sept. 28th, 1901, one female, length 11 mm. Lat. obs. 37° 33 $\frac{3}{4}$ ' S., long. 6° 09' E., Sept. 29th, 1901 (between Tristan da Cunha and the Cape of Good Hope), twelve specimens, average length 12 mm.

In addition to the other sexual differences which have been

described as occurring in the genus, it is worthy of note that the males have somewhat longer mandibular palps than the females.

Distribution. Tropical Atlantic (*Bovallius*); the Mediterranean (*Claus*).

Family Dairellidæ.

Genus DAIRELLA, Bovallius.

Dairella latissima, Bovallius.

Dairella latissima, Bovallius, 1887 (1) & 1889.

Dairella bovallii, Stebbing, 1888.

Dairella latissima, Vosseler, 1901.

Locality. Lat. $37^{\circ} 33\frac{3}{4}'$ S., long. $6^{\circ} 09'$ E., Sept. 29th, 1901 (between Tristan da Cunha and the Cape of Good Hope), one female, length 9.0 mm.

Distribution. Temperate and tropical Atlantic (*Bovallius*); S. Equatorial current and the Mediterranean (*Vosseler*); West coast of Ireland (*Tattersall*); the Mediterranean (*Chevreaux*).

Family Phronimidæ.

Genus PHRONIMA, Latreille.

Phronima sedentaria, Forskål.

Phronima sedentaria, Forsk. 1775.

Phronima sedentaria, Vosseler, 1901.

Locality. Off Madeira, Aug. 14th, 1901, a full-grown male, 11 mm., a young female, 8 mm., and three immature specimens.

Distribution. Widespread in the tropical and temperate seas, and recorded from around the British coasts by Bate and Westwood, Walker, and Tattersall.

Phronima stebbingi, Vosseler.

Phronima stebbingi, Vosseler, 1901.

Phronima pacifica, Stebbing, 1888.

Phronima pacifica, Bovallius, 1889.

Localities. Lat. $28^{\circ} 25'$ S., long. $23^{\circ} 56'$ W., Sept. 17th, 1901, male and female, 8 mm. Lat. $30^{\circ} 43'$ S., long. $21^{\circ} 36'$ W., Sept. 18th, 1901 (N. of Tristan da Cunha), one female, 7 mm. Lat. $37^{\circ} 33\frac{3}{4}'$ S., long. $6^{\circ} 09'$ E., Sept. 29th, 1901 (between Tristan da Cunha and the Cape of Good Hope), two females, 7 mm.

Distribution. Tropical and subtropical Atlantic and Pacific (*Bovallius*); Florida Stream, Sargasso Sea, Guinea Stream, and the N. and S. Equatorial currents (*Vosseler*); off Sierra Leone (*Stebbing*); the Mediterranean (*Chevreaux*).

Family Hyperiidæ.

Genus HYPERIA, Latreille.

Hyperia galba (Montagu).

Locality. Off Madeira, one female, 18 mm.

Distribution. Arctic region of Atlantic and the Bank of Newfoundland (*Bovallius* and *Vosseler*); N. and S. temperate Atlantic, the tropical Atlantic, the Baltic Sea, and the Mediterranean (*Bovallius*).

In addition, it has a widespread distribution around the British and Irish coasts.

Hyperia vosseleri, Stebbing.

Lestrigonus fabrei, Milne-Edwards.

Hyperia fabrei, Bovallius, 1889.

Hyperia vosseleri, Stebbing, 1904.

Locality. Lat. $15^{\circ} 45\frac{1}{2}'$ S., long. $33^{\circ} 11\frac{1}{2}'$ W., Sept. 10th, 1901 (near Bahia), male and female, 3 mm.

Distribution. Tropical Atlantic, Caribbean Sea, and the Indian Ocean (*Bovallius*); the coast of Algeria (*Chevreaux*); Florida Stream, Sargasso Sea, Guinea Stream, and W. and S. Equatorial currents (*Vosseler*).

Hyperia luzoni, Stebbing.

Hyperia luzoni, Stebbing, 1888.

Localities. Lat. $13^{\circ} 59'$ S., long. $34^{\circ} 35'$ W., Sept. 9th, 1901 (near Bahia), one male, 3 mm. Lat. obs. $28^{\circ} 25'$ S., long. $23^{\circ} 56'$ W., Sept. 17th, 1901 (N. of Tristan da Cunha), one male, 4 mm. Lat. $56^{\circ} 30'$ S., long. $169^{\circ} 30'$ E., Dec. 19th (S. of New Zealand), one male, 4 mm.

The last locality is the most southerly yet recorded for the species.

Distribution. China Sea, the Philippines (*Stebbing*, 1888); Sargasso Sea, N. and S. Equatorial currents (*Vosseler*); Bay of Biscay (*Stebbing*, 1904).

Hyperia schizogeneios, Stebbing.

Hyperia schizogeneios, Stebbing, 1888.

Hyperia schizogeneios, Bovallius, 1889.

Locality. Lat. obs. $13^{\circ} 59' S.$, long. $34^{\circ} 35' W.$, Sept. 9th, 1901 (near Bahia), one female, 2.5 mm.

Distribution. Tropical Atlantic (*Bovallius*); the temperate Atlantic and the Mediterranean (*Chevreur*); the Equatorial currents, the Gulf of Guinea, and the Gulf Stream (*Vosseler*).

Genus HYPERIELLA, Bovallius.

Hyperielli antarctica, Bovallius.

Hyperielli antarctica, Bovallius, 1887 (1) & 1889.

Hyperielli antarctica, Stebbing, 1888.

Locality. Lat. $56^{\circ} 30' S.$, long. $169^{\circ} 30' E.$, Dec. 19th, 1903, one male, 8 mm., at surface in dredge. Temp. of air 40° , sea 107° Fahr.

This form agrees in general appearance and in structural details with the description of *H. antarctica* given by Bovallius (1889), and the form of the uropods particularly is in close agreement with his figure. It is curious, however, to notice the presence of distinct spines on the three segments of the metasome, a character quoted by Stebbing (1888) as being representative of *H. dilatata*.

It may also be remarked that Walker (1907) has recorded the capture of *H. dilatata* from the winter-quarters of the 'Discovery' Expedition.

Distribution. The American Antarctic region, lat. $58^{\circ} 40' S.$, long. $76^{\circ} W.$ (*Bovallius*).

Genus HYPERIOIDES, Chevreux.

Hyperioides longipes, Chevreux.

Hyperioides longipes, Chevreux, 1900.

Locality. Lat. $37^{\circ} 33\frac{3}{4}' S.$, long. $6^{\circ} 09' E.$, Sept. 29th, 1901 (near Tristan da Cunha), eight examples, 5-7 mm.

This record of the occurrence of the species indicates a considerable southerly extension of its geographical range.

Distribution. Temperate and tropical Atlantic (*Chevreur* and *Vosseler*); the Mediterranean (*Vosseler* and *Chevreur*); Bay of Biscay (*Stebbing*); W. coast of Ireland (*Walker* and *Tattersall*).

Genus EUTHEMISTO, Bovallius.

Ethemisto bispinosa, Boeck.

Locality. Lat. $35^{\circ} 10' S.$, long. $13^{\circ} 40' W.$, Sept. 22nd, 1901 (near Tristan da Cunha), one female, 13 mm.

Distribution. General throughout the N. Atlantic and Arctic Oceans and the North Sea.

Its occurrence, therefore, in these latitudes is interesting as being the most southerly yet recorded.

Euthemisto compressa, Goës.

Localities. Lat. $35^{\circ} 10'$ S., long. $13^{\circ} 40'$ W., Sept. 22nd, 1901, eleven specimens, average length 14 mm. Lat. D.R. $36^{\circ} 27\frac{1}{2}'$ S., long. $8^{\circ} 20'$ W., Sept. 24th, 1901 (near Tristan da Cunha), numerous small specimens, average length 6.5 mm.

Distribution. General in the N. Atlantic and Arctic Oceans and the North Sea.

Several small specimens of an *Euthemisto* were taken at the following locality:—

Lat. $62^{\circ} 8'$ S., long. $170^{\circ} 45'$ E., Dec. 22nd, 1903, at the surface.

These are in such bad condition that it is impossible to identify them with any certainty; but in all probability they belong to *E. gaudichaudii*, Guérin, which has been recorded by Walker (1907) from lat. $54^{\circ} 01'$ S., long. $170^{\circ} 49'$ E., to lat. $63^{\circ} 04'$ S., long. $175^{\circ} 43'$ E.

Genus PARATHEMISTO, Boeck.

Parathemisto oblivia, Kröyer.

Locality. Lat. $15^{\circ} 45\frac{1}{2}'$ S., long. $33^{\circ} 11\frac{1}{2}'$ W., Sept. 9th, 1901, one female, 3.5 mm.

The specimen is considerably damaged, and is consequently difficult to identify with any certainty.

Distribution. Arctic region, Greenland, W. coast of Norway, and N. temperate region; coast of Great Britain (*Bovallius*); Gulf Stream (*Vosseler*); Bay of Biscay (*Stebbing*); coast of France and Spain (*Chevreux*).

Family PHROSINIDÆ, Stebbing.

Genus PHROSINA, Risso.

Phrosina semilunata, Risso.

Localities. Off Madeira, an adult female and two young specimens. Lat. $35^{\circ} 14\frac{1}{4}'$ S., long. $15^{\circ} 11\frac{3}{4}'$ E., Oct. 10th, 1901 (near the Cape of Good Hope), two females.

Distribution. Atlantic, Mediterranean, Indian Ocean, and

Pacific (*Bovallius*); Gulf of Florida, Sargasso Sea, N. Equatorial current, Gulf of Guinea, and the Gulf Stream (*Vosseler*); Atlantic Ocean, around the Azores (*Chevreux*).

Genus PRIMNO, Guérin.

Primno macropa, Guérin.

Euprimno macropus, Bovallius, 1887 (1).
Primno macropa, Stebbing, 1904.

Locality. Lat. D.R. $36^{\circ} 27\frac{1}{2}'$ S., long. $8^{\circ} 20'$ W., Sept. 24th, 1901 (near Tristan da Cunha), one female, 6 mm.

Distribution. Tropical and subtropical regions of the Atlantic and Pacific, the Indian Ocean, the Australian Antarctic region (*Bovallius*); S. Pacific (*Stebbing*, 1888); the North Atlantic (*Chevreux* and *Vosseler*); Bay of Biscay (*Stebbing*, 1904).

Genus ANCHYLOMERA, Milne-Edwards.

Anchylomera blossevillei, Milne-Edwards.

Locality. Lat. $19^{\circ} 13'$ S., long. $39^{\circ} 35'$ W., Sept. 12th, 1901 (near Bahia), female, 7.5 mm.

Distribution. The Atlantic, Mediterranean, Indian Ocean, the Pacific, and the Antarctic region (*Bovallius*); N. Atlantic (*Vosseler* and *Chevreux*).

Family Typhidæ, Dana.

Genus PLATYSCELUS, Spence Bate.

Platyscelus armatus, Claus.

Eutyphis armatus, Claus, 1879.
Eutyphis armatus, Bovallius, 1887 (1).

Locality. Lat. $15^{\circ} 45\frac{1}{2}'$ S., long. $33^{\circ} 11\frac{1}{2}'$ W., Sept. 9th, 1901 (near Bahia), male and female, 2 mm.

Distribution. Atlantic and Indian Oceans, coast of Chili and Zanzibar (*Claus*); N. Pacific and N. Atlantic (*Stebbing*).

In addition the collection contains one specimen with the label missing, which I judge to be *P. armatus*, var. *inermis*. This form lacks the characteristic projection of the fifth epimeral plate, and the structure of the gnathopods differs slightly from the description of Claus, the metacarpus of the second pair being acutely narrowed at the apex, not rounded as in Claus's figure (1887).

Genus HEMITYPHIS, Claus.

Hemityphis tenuimanus, Claus.

Hemityphis tenuimanus, Claus, 1879.

Dithyrus tenuimanus, Bovallius, 1887 (1).

Hemityphis tenuimanus, Claus, 1887.

Hemityphis tenuimanus, Stebbing, 1888.

Localities. Lat. $35^{\circ} 10'$ S., long. $13^{\circ} 40'$ W., Sept. 22nd, 1901 (near Tristan da Cunha), one male, 5 mm. Lat. $15^{\circ} 45\frac{1}{2}'$ S., long. $33^{\circ} 11\frac{1}{2}'$ W., Sept. 10th, 1901 (near Bahia), one, immature.

Distribution. Atlantic Ocean and the Cape of Good Hope (Claus); the Pacific Ocean and the N. Atlantic (Stebbing); off the Azores (Chevreux).

Genus PARATYPHIS, Claus.

Paratyphis parvus, Claus.

Paratyphis parvus, Claus, 1887.

Locality. Lat. obs. $13^{\circ} 59'$ S., long. $34^{\circ} 35'$ W., Sept. 9th, 1901; one female, 3 mm.

Distribution. Lagos, the Atlantic Ocean (Claus); off the Azores (Chevreux).

The above is therefore the most southerly record yet obtained for this species.

Family Scelidæ, Claus.

Genus HEMISCELUS, nov.

First and second gnathopods with the carpal joint produced so that *both* limbs are subcheliform.

Laminar basal joint of the sixth leg without a sickle-shaped slit.

Seventh leg elongate and completely developed.

As I had only a single specimen at my disposal, the mouth-organs were not dissected out.

In many respects this form closely approaches *Schizoscelus ornatus*, Claus; but the possession of a subcheliform first gnathopod serves to distinguish it. Another point of difference is the absence of the pocket-like slit on the first joint of the sixth leg, which is so characteristic a feature of *Schizoscelus*.

A cursory examination of the gnathopods might induce one to regard the present specimen as a member of the

Typhidæ, but the structure of the seventh leg is totally unlike that of any representative of this family with which it might otherwise be confused. The general shape of the body, the structure of the appendages, and formation of the uropods and telson seem to indicate that it occupies a position intermediate between the genera *Euscelus* and *Schizoscelus*, approaching the former in the shape of the gnathopods and the latter in the general form of the urosome and telson.

Hemiscelus diplochelatus, gen. et sp. n.
(Pl. VII. figs. 1-9.)

Locality. Lat. obs. $15^{\circ} 45\frac{1}{2}'$ S., long. $33^{\circ} 11\frac{1}{2}'$ W., Sept. 10th, 1901 (near Bahia), one female, 2 mm.

Body broad and stoutly built, pereion slightly arched.

Head short, flattened in front, slightly deeper than the anterior thoracic segments.

Eyes large, not reaching to the dorsal surface of the head.

Coxal plates sharply distinct from the thoracic segments, rectangular in shape, with the hinder corners sharply produced backwards.

First gnathopods (Pl. VII. fig. 1) with the basal joint about as long as the rest of the limb together and having one small seta on the anterior border; merus not produced; carpus broad, with five small setæ on the hinder margin; carpal projection minutely serrated, about half as long as the propodus; dactylus stout, slightly curved, about one-third of the length of the propodus.

Second gnathopods (Pl. VII. fig. 2) with the branchial vesicle oval, slightly broader than the basal joint, but not quite as long; basal joint narrow and almost rectangular, considerably longer than that of the preceding pair; merus somewhat broader than the third joint, having the two anterior corners slightly produced, and a long subapical seta on the hind margin; carpal projection serrated, almost as long as the propodus; dactylus slender, tapering to a fine point, and strongly curved.

Third and fourth pairs of legs (Pl. VII. figs. 3 & 4) with the branchial vesicles slightly longer than the linear basal joint; merus somewhat widened in the distal portion; carpus shorter than the merus, lower front corner not produced; propodus slightly curved, narrower than the carpus; dactylus stout and strongly curved.

Fifth pair of legs (Pl. VII. fig. 5) having the basal joint longer than in the third and fourth, and broadly ovate, with

the front margin descending below the hind margin; third joint very short; merus slightly longer than the carpus and widest in its middle portion; propodus abruptly narrowed and slightly curved; dactylus slender and tapering, equal in length to the propodus.

Sixth pair of legs (Pl. VII. fig. 6) with the last three joints missing in the present specimen; basal joint broad and laminar, considerably longer than that of the preceding pair, and slightly wider in the upper than in the lower portion; posterior margin more convex than the anterior; merus about equal in length to the third joint, widening somewhat towards its lower border.

Seventh pair of legs (Pl. VII. fig. 7) about equal in length when in a folded position to the basal joint of the sixth pair, and very slenderly built; basal joint not quite so long as the remaining ones and narrowing somewhat towards the distal end; merus considerably longer than the two following joints together and slightly broader than either; carpus and propodus almost equal in size, the latter having a small hooked finger at its apex (Pl. VII. fig. 8).

Pleopods with the peduncles shorter than the rami.

Uropods having all the rami comparatively smooth, with the exception of a few minute pectinations around the apices.

Peduncles of the first pair equal in length to the rami; rami lanceolate, reaching below the telson.

Peduncles of the second pair longer than the rami; inner ramus almost twice as long and slightly broader than the outer.

Peduncles of the third pair slightly shorter than the inner ramus; inner ramus twice as long and fully twice as broad as the outer.

Telson (Pl. VII. fig. 9) broadly triangular, with rounded apex and minutely pectinated margin.

Genus SCHIZOSCELUS, Claus.

Schizoscelus ornatus, Claus.

Schizoscelus ornatus, Claus, 1879.

Locality. Lat. 13° 59' S., long. 34° 35' W., Sept. 9th, 1901, one female.

Distribution. The Atlantic Ocean (Claus); the Philippine Islands (Stebbing); between the Azores and Newfoundland (Chevreux).

Family Pronoidæ.

Genus EUPRONOË, Claus.

Eupronoë armata, Claus.*Eupronoë armata*, Claus, 1879.

Localities. Lat. D.R. $10^{\circ} 32' S.$, long. $32^{\circ} 29' W.$, Sept. 7th, 1901, one male, 8 mm., and two females (immature). Lat. $13^{\circ} 59' S.$, long. $34^{\circ} 35' W.$, Sept. 9th, 1901, two females, 3 mm.

The specimens from the latter locality resemble *E. armata* in the general shape of the body and appendages, but differ in the form of the seventh leg, which has the terminal joint elongate.

It is possible that they may be forms of *E. intermedia*, Stebbing, but I prefer to regard them as immature *E. armata*.

Distribution. Atlantic Ocean, Zanzibar (Claus); the Azores (Chevreux). Walker has recently reported its capture in the Indian Ocean.

Family Lycæidæ.

Genus BRACHYSCELUS, Spence Bate.

Brachyscelus crusculum, Spence Bate.*Thamyris mediterranea*, Claus, 1879.

Locality. Lat. $28^{\circ} 25' S.$, long. $23^{\circ} 56' W.$, Sept. 17th, 1901 (N. of Tristan da Cunha), one male, 6.5 mm.

Distribution. Mediterranean (Claus, Chevreux, and Vosseler); the Atlantic (Stebbing and Chevreux); N. Pacific (Stebbing); West coast of Ireland (Walker and Tattersall).

The present locality, therefore, would appear to be the most southerly yet recorded for the species.

Genus LYCÆA, Dana.

Lycæa vincentii, Stebbing.*Lycæa vincentii*, Stebbing, 1888.

Localities. Off Madeira, one male, length 8 mm. Lat. $13^{\circ} 59' S.$, long. $34^{\circ} 35' W.$, Sept. 9th, 1901, young female, 2.5 mm.

This specimen agrees very well with Stebbing's figures of *L. vincentii*, especially as regards the structure of the seventh leg.

The characters separating *L. vincentii*, Stebbing, from

L. robusta, Claus, and *L. pulex*, Marion, to judge from published descriptions and figures, do not seem very convincing, and I have been led to refer my specimen to *L. vincentii* mainly because the locality of capture agrees with that of the type, rather than because I am convinced of its separate specific identity from *L. robusta* and *L. pulex*.

Distribution. Off St. Vincent and the Cape Verde Islands (*Stebbing*).

Lycea sp.

Locality. Lat. $15^{\circ} 45\frac{1}{2}'$ S., long. $33^{\circ} 11\frac{1}{2}'$ W., Sept. 10th, 1901, one female.

In this specimen the entire urus is missing, so that it is impossible to identify it with any certainty. In all probability it is *L. vincentii*.

Family *Oxycephalidæ*, Spence Bate.

Genus *STREETSIA*, *Stebbing*.

Streetsia washingtoni, Senna?

Locality. Lat. $19^{\circ} 13'$ S., long. $39^{\circ} 35'$ W., Sept. 12th, 1901 (S. Atlantic, between Bahia and Rio de Janeiro), one male, 19 mm.

In many respects this form approaches closely to *S. stebbingi*, Chevreux (1900), but it differs in several important points, chief amongst which are: (1) the presence of serrations on the under margin of the head; (2) the inferior margin of the propodus of the first gnathopod is minutely serrated, whereas in *S. stebbingi* it bears four large teeth; (3) the carpus of the first gnathopod has four large teeth on the palmar margin, instead of only one, and the teeth on the propodus are more pronounced; (4) the inner distal corner of the peduncle of the second uropod is produced into a tooth instead of being rounded.

In general appearance and in the structure of the appendages the specimen is in close agreement with *S. washingtoni*, Senna (1902), but here, again, minor differences occur: (1) the serrations on the rostrum cover a considerably larger area than is represented in Senna's figure, extending at least to the commencement of the eye; (2) the first gnathopod has several minute serrations on the inferior margin of the propodus; (3) the teeth on the propodus of the second gnathopod are more pronounced than those of Senna's specimen.

The rami of the uropods are unfortunately missing, and

they are a feature which might have materially assisted in the identification.

The only other known species possessing a serrated rostrum is *S. challengerii*, Stebbing (1888), but the form of the urosome in the 'Discovery' specimen is totally different from that of the former, the last ural segment being approximately equal in length to the telson, whereas that of *S. challengerii* is only half as long as the telson.

On the whole, the specimen is far more in agreement with *S. washingtoni* than with either of the other forms, and I am inclined to regard it as representing that species.

Distribution. The Mediterranean (*Senna*).

GENUS DORYCEPHALUS, Bovallius.

Dorycephalus lindströmi, Bovallius.

Leptocotis lindstroemi, Bovallius, 1887 (1).

Dorycephalus lindstroemi, Bovallius, 1890.

Locality. Lat. 19° 13' S., long. 39° 35' W., Sept. 12th, 1901, one male, 10.5 mm.

Distribution. Subtropical region of the Atlantic (*Bovallius*); the North Atlantic (*Chevreaux*).

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EXPLANATION OF THE PLATES.

PLATE IV.

Vibilia serrata, sp. n., male, lateral view. × 20.

PLATE V.

Vibilia serrata, sp. n.

- Fig. 1. Male, first antenna. × 64.
- Fig. 2. " second antenna. × 64.
- Fig. 3. " first gnathopod. × 64.
- Fig. 4. " second gnathopod. × 64.
- Fig. 5. " seventh leg. × 64.
- Fig. 6. " telson and uropods. × 60.

PLATE VI.

Vibilia hodgsoni, sp. n.

- Fig. 1. Head and first segments of male, lateral view. × 64.
- Fig. 2. Male, first gnathopod. × 64.
- Fig. 3. " second gnathopod. × 64.
- Fig. 4. " seventh leg. × 64.
- Fig. 5. " terminal joints of the seventh leg. × 300.
- Fig. 6. " urosome, telson, and uropods. × 64.

PLATE VII.

Hemiscelus diplochelatus, gen. et sp. n.

- Fig. 1. Female, first gnathopod. × 64.
- Fig. 2. " second gnathopod. × 64.
- Fig. 3. " third leg. × 64.
- Fig. 4. " fourth leg. × 64.
- Fig. 5. " fifth leg. × 64.
- Fig. 6. " sixth leg. × 64.
- Fig. 7. " seventh leg. × 64.
- Fig. 8. " terminal joints of the seventh leg. × 300.
- Fig. 9. " telson and uropods. × 64.